

100W Broadband High Power Amplifier 0.7GHz-2.7GHz



Note: The photo is for illustration only.
Please refer to the outline drawing.

Product Description

RFLUPA0727GA is a broadband high power amplifier with a frequency range of 0.7 to 2.7GHz.

The power output of this amplifier is 100Watt typical. The typical gain is 50dB with a gain flatness of ± 2.5 dB. This power amplifier works with a +28 VDC power supply.

The working temperature of this product is between -40°C and +60°C.

Features

- Broadband High Power Amplifier
- Power Gain 50dB Typical
- RF Output Power 100W Typical
- Supply Voltage +28VDC
- 50 Ohm Matched Input / Output

Typical Applications

- Wireless Infrastructure
- Military and Aerospace Applications
- Test Instrumentation
- Radar Systems
- 5G Wireless Communications
- Microwave Radio Systems
- TR Modules
- Research and Development
- Cellular Base Stations

Electrical Specifications ($T_A = +25^\circ\text{C}$)

Parameter	Min	Typ	Max	Units
Frequency Range	0.7		2.7	GHz
RF Output Power @PSAT	60	100		W
Power Gain		50		dB
Power Gain Flatness		± 2.5		dB
Input Return Loss			-10	dB
Harmonics @60W		-10	-8	dBc
Spurious Signals		-60		dBc
Operating Voltage	24	28	32	V
DC Current @80W		13		A
Switching Time @1kHz TTL		2	5	us
Weight (Amp Only)		2.16		lbs.
Impedance		50		Ohms
Input / Output Connectors	SMA- Female(Input)-SMA-Female(Output)			
DC Interface Connector	D-Sub 9-Pin, Male			
Package	Epoxy Sealed (Standard)			
	Hermetically Sealed (Optional)			

Absolute Maximum Ratings

Parameter	Rating
Input RF drive level without damage	+10 dBm (Max)
Load VSWR @ POUT =70W	∞ @ all load phase & amplitude for duration of 1 minute ; 3:1 @ all load phase & amplitude continuous

Bias Up Procedure

- 1.Connect Ground Pin
- 2.Connect input and output
- 3.Connect +28V biasing

Bias Down Procedure

- 1.Turn off +28V biasing
- 2.Remove RF connection
- 3.Remove Ground.

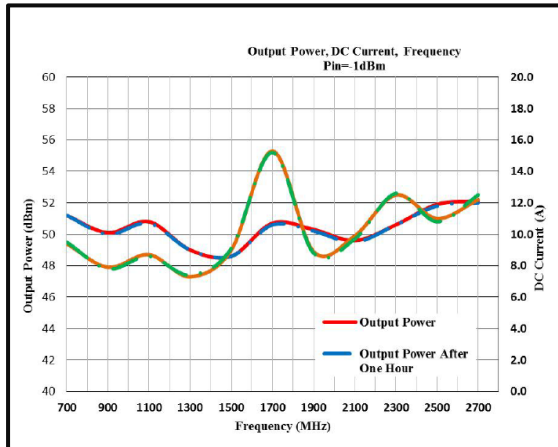
Environmental Specifications and Test Standards

Parameter	Description
Operational Temperature	-40°C to +60°C (Case Temperature)
Storage Temperature	-45°C to +85°C
Thermal Shock	-40°C → +60°C (5 Cycles / 10 hours)
**Random Vibration	MIL-STD-202G Table 214-I, Test Condition Letter C 1.5 Hours Per Axis
High Temperature Burn In	Temperature +60°C for 72 Hours
Shock	1. Weight >20g, 50g half sine wave for 11ms, Speed variation 3.44m/s 2. Weight <=20g, 100g Half sine wave for 6ms, Speed variation 3.75m/s 3. Total 18 times (6 directions, 3 repetitions per direction).
Altitude	Standard: 30,000 Ft (Epoxy Sealed Controlled Environment) Optional: Hermetically Sealed (60,000 ft. 1.0 PSI min)
Hermetically Sealed (Optional)	MIL-STD-883 (For Hermetically Sealed Units)

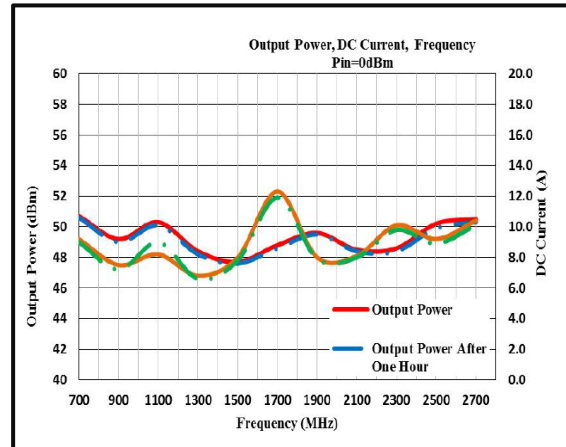
**For vibration testing details please see additional information section.

Typical Performance Plots

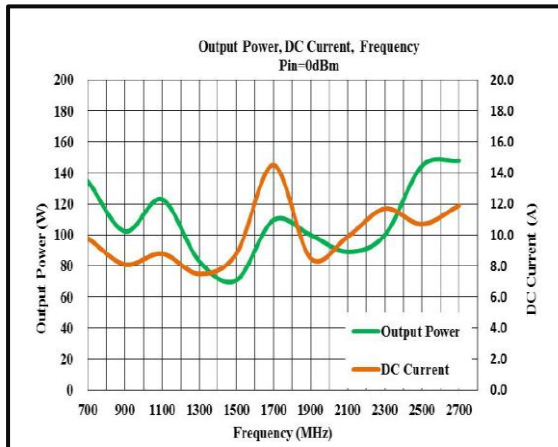
Output Power (Low temp. $-20 \pm 3^\circ\text{C}$)



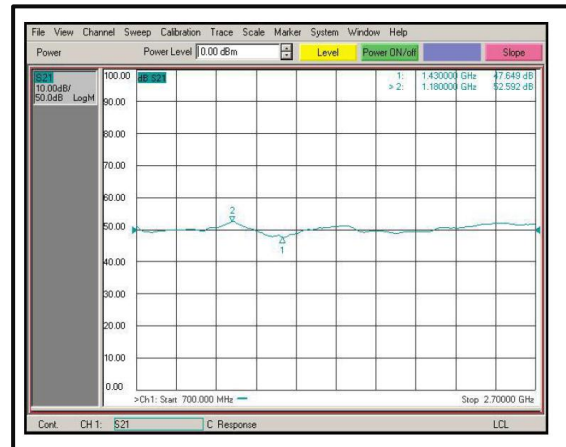
Output Power (High temp. $+60 \pm 3^\circ\text{C}$)



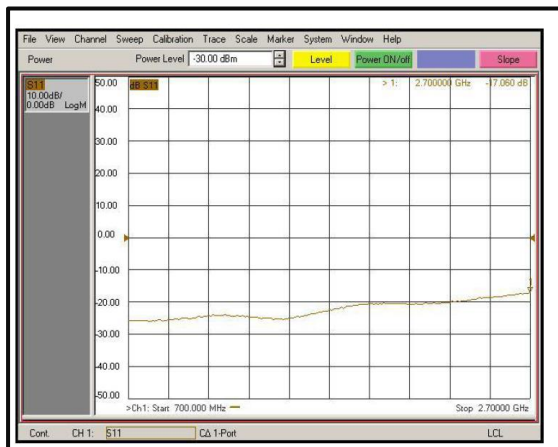
Output Power (Normal temp. $+25 \pm 3^\circ\text{C}$)



Power Gain



Input Return Loss

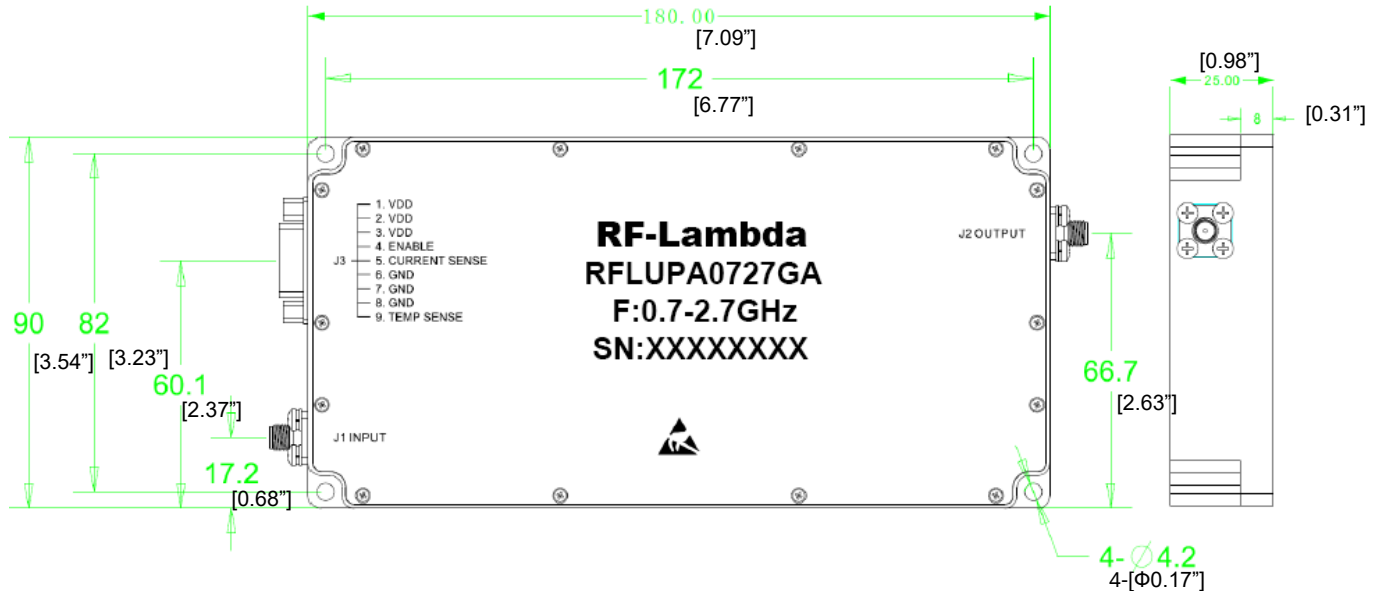


Note: Adequate heatsink required.

DC Interface Connector

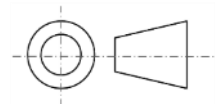
Pin #	Description	Specifications
1	VDD	28VDC
2	VDD	28VDC
3	VDD	28VDC
4	ENABLE	Amplifier Enable: TTL Logic High (3.3V) (Internally Pulled-Low)
5	CURRENT SENSE	Analog voltage relative to IDD @ 50mV per Ampere
6	GND	Ground
7	GND	Ground
8	GND	Ground
9	TEMP MONITOR	Analog voltage relative to Module's Temperature @ 10 mV/°C

Outline Drawing



Notes:

1. Package Material: Aluminum or Copper
2. Finish: Nickel Plated
3. All dimensions are in millimeters [inches].
4. Housing Tolerances $\pm 0.2[0.008]$ unless otherwise specified(Excl Heat Sink).
5. Heat sink required during operation (sold separately). Matching heatsink is listed on our website. If customer would like to use their own cooling method, please make sure the amplifier will operate under the specs that listed in page 2 of this datasheet.
6. Standard torque wrench must be used to secure RF connectors.



Additional Information

Documentation

Webpage

ESD Policy

https://rflambda.com/pdf/rflambda_esd_control.pdf

Heatsink Lookup Specifications

https://rflambda.com/search_heatsink.jsp

Connector Torque Specifications

https://www.rflambda.com/pdf/Torque_Specifications.pdf

Random Vibration Test Standard

https://www.rflambda.com/pdf/rflambda_random_vibration_MIL-STD-202G.pdf

Ordering Information

Part Number	Modification	Description
RFLUPA0727GA	Standard	0.7GHz-2.7GHz Power Amplifier

Amplifier Use

Ensure that the amplifier input and output ports are safely terminated into a proper 50 ohm load before turning on the power. Never operate the amplifier without a load. A proper 50 ohm load is defined as a load with impedance less than 1.9:1 or return loss larger than 10dB relative to 50 Ohm within the specified operating band width.

Power Supply Requirements

Power supply must be able to provide adequate current for the amplifier. Power supply should be able to provide 1.5 times the typical current or 1.2 times the maximum current (whichever is greater).

In most cases, RF - Lambda amplifiers will withstand severe mismatches without damage. However, operation with poor loads is discouraged. If prolonged operation with poor or unknown loads is expected, an external device such as an isolator or circulator should be used to protect the amplifier.

Ensure that the power is off when connecting or disconnecting the input or output of the amp.

Prevent overdriving the amplifier. Do not exceed the recommended input power level.

Adequate heat-sinking required for RF amplifier modules. Please inquire.

Amplifiers do not contain Thermal protection, Reverse DC polarity or Over voltage protection with the exception of a few models. Please inquire.

Proper electrostatic discharge (ESD) precautions are recommended to avoid performance degradation or loss of functionality.

What is not covered with warranty?

Each RF - Lambda amplifier will go through power and temperature stress testing.

Since the die, ICs or MMICs are fragile, these are not covered by warranty. Any damage to these will NOT be free to repair.

Important Notice

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